

WHAT IS CLAIMED IS:

1. A method of crystallizing an amorphous silicon film, comprising;

 locating a substrate having an amorphous silicon film in a sequential lateral solidification (SLS) apparatus;

 irradiating the amorphous silicon film in a first irradiated region using a laser beam that passes through a mask, wherein the mask includes a light absorptive portion for blocking a laser beam and a plurality of stripe-shaped light transmitting portions for passing the laser beam, wherein each light-transmitting portion includes triangular-shaped edges on both sides, and wherein laterally growing grains are formed by growing laterally from an interface between liquid silicon and solid silicon;

 moving the mask in an X-axial direction by a distance less than the length of the light transmitting portions to overlap the previously crystallized grain regions; and

 performing a second crystallization such that laterally growing grains grow in a second irradiated region.
2. The method of claim 1, further comprising transversely moving the mask a plurality of times to complete the X-axis directional crystallization.
3. The method of claim 2, further comprising moving the mask in a Y-axial direction by a distance less than the width of light transmitting portions after the amorphous silicon film is crystallized in the X-axial direction.
4. The method of claim 3, further comprising conducting a second X-axis directional crystallization after moving the mask in the Y-axial direction.

5. The method of claim 1, wherein the distance between the adjacent light transmitting portions is less than the width of the light transmitting portion.
6. The method of claim 1, wherein the width of the light transmitting portions is less than or equal to twice the maximum length of lateral grain growth that is to be grown by sequential lateral solidification (SLS).
7. A sequential lateral solidification (SLS) mask comprising:
 - a light absorptive portion for blocking a laser beam; and
 - a plurality of stripe-shaped light transmitting portions for passing the laser beam.
8. The mask of claim 7, wherein each light-transmitting portion includes triangular-shaped edges on both sides.
9. The mask of claim 7, wherein each light-transmitting portion includes semicircular-shaped edges on both sides.
10. The mask of claim 7, wherein the distance between the adjacent light transmitting portions is less than the width of the light transmitting portion.
11. The mask of claim 7, wherein the width of the light transmitting portions is less than or equal to twice the maximum length of lateral grain growth that is to be grown by sequential lateral solidification (SLS).

12. A method of crystallizing an amorphous silicon film, comprising:

locating a substrate having an amorphous silicon film in a sequential lateral solidification (SLS) apparatus;

irradiating the amorphous silicon film in a first irradiated region using a laser beam that passes through a mask, wherein the mask includes a light absorptive portion for blocking a laser beam and a plurality of stripe-shaped light transmitting portions for passing the laser beam, wherein each light-transmitting portion includes semicircular-shaped edges on both sides, and wherein laterally growing grains are formed by growing laterally from an interface between liquid silicon and solid silicon;

moving the mask in an X-axial direction by a distance less than the length of the light transmitting portions to overlap the previously crystallized grain regions; and

performing a second crystallization such that laterally growing grains grows in a second irradiated region.

13. The method of claim 12, further comprising transversely moving the mask a plurality of times to complete the X-axis directional crystallization.

14. The method of claim 13, further comprising moving the mask in a Y-axial direction by a distance less than the width of light transmitting portions after the amorphous silicon film is crystallized in the X-axial direction.

15. The method of claim 14, further comprising conducting a second X-axis directional crystallization after moving the mask in the Y-axial direction.

16. The method of claim 12, wherein the distance between the adjacent light transmitting portions is less than the width of the light transmitting portion.
17. The method of claim 12, wherein the width of the light transmitting portions is less than or equal to twice the maximum length of lateral grain growth that is to be grown by sequential lateral solidification (SLS).
18. A method of crystallizing an amorphous silicon film, comprising:
 - locating a substrate having an amorphous silicon film in a sequential lateral solidification (SLS) apparatus;
 - irradiating the amorphous silicon film in a first irradiated region using a laser beam that passes through a mask, wherein the mask includes a light absorptive portion for blocking a laser beam and a plurality of rectangular stripe-shaped light transmitting portions for passing the laser beam, and wherein laterally growing grains are formed by growing laterally from an interface between liquid silicon and solid silicon;
 - moving the mask in an X-axial direction by a distance less than the length of the light transmitting portions to overlap the previously crystallized grain regions; and
 - performing a second crystallization such that laterally growing grains grows in a second irradiated region.
19. The method of claim 18, further comprising transversely moving the mask a plurality of times to complete the X-axis directional crystallization.

20. The method of claim 19, further comprising moving the mask in a Y-axial direction by a distance less than the width of light transmitting portions after the amorphous silicon film is crystallized in the X-axial direction.
21. The method of claim 20, further comprising conducting a second X-axis directional crystallization after moving the mask in the Y-axial direction.
22. The method of claim 18, wherein the distance between the adjacent light transmitting portions is less than the width of the light transmitting portion.
23. The method of claim 18, wherein the width of the light transmitting portions is less than or equal to twice the maximum length of lateral grain growth that is to be grown by sequential lateral solidification (SLS).